

In the Claims

1. (Currently Amended) A network device comprising:
a network interface, wherein
said network interface comprises a processor and a first memory, and
said processor and said first memory are coupled to one another; and
a tunnel classification stage, wherein
 said tunnel classification stage is coupled to said network interface,
 said tunnel classification stage comprises
 a packet processing section comprising at least one processor,
 a security group identifier identification unit, coupled to said packet
 processing section, and
 a tunnel classification unit, coupled to said packet processing section and
 said security group identifier identification unit,
 said security group identifier is configured to identify a security group of a sender
 of said packet, and
 said packet processing section is configured to
 classify a packet based on a security group identifier (SGI) of said packet,
 said packet processing section is further configured to forward said
 packet through a tunnel via which said packet is to be forwarded,
 and
 said packet processing section is further configured use said SGI in
 determining determine said tunnel using said SGI.

2.-3. (Cancelled)

4. (Previously Presented) The network device of claim 1, wherein
said packet processing section is further configured to forward said packet through said
tunnel based on information in a header of said packet.

5. (Cancelled)

6. (Previously Presented) The network device of claim 1, wherein a single router comprises said tunnel classification stage.

7. (Previously Presented) The network device of claim 6, wherein said tunnel classification unit comprises:

a lookup unit.

8. (Previously Presented) The network device of claim 7, wherein said lookup unit comprises:

an access control list (ACL); and

a content-addressable memory, wherein

said content-addressable memory is configured to access said ACL by virtue of
being configured to
generate an index, and
provide said index to said ACL.

9. (Previously Presented) The network device of claim 8, wherein
said network device further comprises a memory,
said ACL is stored in said memory,
said content-addressable memory and said memory are coupled to one another,
said ACL comprises a plurality of ACL entries (ACEs), and
each of said ACEs comprises a tunnel identifier field and a security group identifier field.

10. (Previously Presented) A method comprising:

assigning a security group identifier (SGI) to a packet, wherein

said SGI is assigned based on a security group of a sender of said packet;
classifying said packet based on said SGI;
determining a routing of said packet, wherein said determining is based on said SGI; and
forwarding said packet via a tunnel identified by said routing, if forwarding a packet
having said SGI via said tunnel is permitted.

11. (Original) The method of claim 10, further comprising:
determining whether said packet can be sent via a tunnel based on a result of said
classifying said packet.

12.-13. (Cancelled)

14. (Original) The method of claim 11, wherein said determining comprises:
generating an index, wherein said index comprises said SGI; and
using said index to access an access control list (ACL), wherein said ACL includes
information as to whether said packet can be sent via a tunnel.

15. (Original) The method of claim 14, wherein said information comprises:
an SGI field; and
a tunnel identifier field.

16. (Original) The method of claim 10, further comprising:
forwarding said packet from an ingress router to an egress router via a tunnel.

17. (Original) The method of claim 16, further comprising:
receiving said packet at said egress router; and
determining whether said packet can be forwarded by said egress router based on said
SGI.

18. (Original) The method of claim 17, wherein said determining whether said packet
can be forwarded further comprises:
determining whether said packet can be forwarded by said egress router based on said
SGI, a destination of said packet and an identifier of said tunnel.

19. (Original) The method of claim 17, wherein said determining whether said packet
can be forwarded further comprises:
generating an index into an access control list (ACL), wherein

said ACL comprises information regarding whether said packet can be forwarded by said egress router, and
 said index includes said identifier of said tunnel; and
 accessing said ACL using said index.

20. (Previously Presented) A computer system comprising:
 a processor;
 computer readable storage medium coupled to said processor; and
 computer code, encoded in said computer readable storage medium, configured to cause said processor to:
 assign a security group identifier (SGI) to a packet, wherein
 said SGI is assigned based on a security group of a sender of said packet;
 generate a classification of said packet by virtue of being
 configured to classify said packet based on said SGI;
 determine whether said packet can be sent via a tunnel based on said classification; and
 forward said packet via said tunnel, if forwarding a packet having said SGI via said tunnel is permitted.

21. (Cancelled)

22. (Previously Presented) The computer system of claim 20, wherein said computer code is further configured to cause said processor to:
 determine a routing of said packet, wherein said classification is also based on said routing.

23. (Cancelled)

24. (Previously Presented) The computer system of claim 20, wherein said computer code configured to cause said processor to determine is further configured to cause said processor to:

 generate an index, wherein said index comprises said SGI; and

use said index to access an access control list (ACL), wherein said ACL includes information as to whether said packet can be sent via a tunnel.

25. (Original) The computer system of claim 24, wherein said information comprises:

an SGI field; and
a tunnel identifier field.

26. (Original) The computer system of claim 20, wherein said computer code is further configured to cause said processor to:

forward said packet from an ingress router to an egress router via a tunnel.

27. (Original) The computer system of claim 26, wherein said computer code is further configured to cause said processor to:

receive said packet at said egress router; and
determine whether said packet can be forwarded by said egress router based on said SGI.

28. (Original) The computer system of claim 27, wherein said computer code configured to cause said processor to determine whether said packet can be forwarded by said egress router is further configured to cause said processor to:

determine whether said packet can be forwarded by said egress router based on said SGI,
a destination of said packet and an identifier of said tunnel.

29. (Original) The computer system of claim 27, wherein said computer code configured to cause said processor to determine whether said packet can be forwarded by said egress router is further configured to cause said processor to:

generate an index into an access control list (ACL), wherein
said ACL comprises information regarding whether said packet can be forwarded
by said egress router, and
said index includes said identifier of said tunnel; and
access said ACL using said index.

30. (Previously Presented) A computer program product comprising:
a first set of instructions, executable on a computer system, configured to assign a
security group identifier (SGI) to a packet, wherein
said first set of instructions are further configured to assign said SGI based on a
security group of a sender of said packet;
a second set of instructions, executable on said computer system, configured to classify
said packet based on said SGI;
a third set of instructions, executable on said computer system, configured to determine a
routing of said packet, wherein said determining is based on said SGI;
a fourth set of instructions, executable on said computer system, configured to forward
said packet via said tunnel, if forwarding a packet having said SGI via said tunnel
is permitted; and
computer readable storage media, wherein said computer program product is encoded in
said computer readable storage media.

31. (Previously Presented) The computer program product of claim 30, wherein said
second set of instructions is further configured to generate a classification of said packet, and
further comprising:

a fifth set of instructions, executable on said computer system, configured to determine
whether said packet can be sent via a tunnel based on said classification.

32.-33. (Cancelled)

34. (Previously Presented) The computer program product of claim 31, wherein said
fifth set of instructions comprises:

a first subset of instructions, executable on said computer system, configured to generate
an index, wherein said index comprises said SGI; and
a second subset of instructions, executable on said computer system, configured to use
said index to access an access control list (ACL), wherein said ACL includes
information as to whether said packet can be sent via a tunnel.

35. (Original) The computer program product of claim 34, wherein said information comprises:

- an SGI field; and
- a tunnel identifier field.

36. (Previously Presented) The computer program product of claim 30, further comprising:

- a fifth set of instructions, executable on said computer system, configured to forward said packet from an ingress router to an egress router via a tunnel.

37. (Previously Presented) The computer program product of claim 36, further comprising:

- a sixth set of instructions, executable on said computer system, configured to receive said packet at said egress router; and
- a seventh set of instructions, executable on said computer system, configured to determine whether said packet can be forwarded by said egress router based on said SGI.

38. (Previously Presented) The computer program product of claim 37, wherein said seventh set of instructions comprises:

- a first subset of instructions, executable on said computer system, configured to determine whether said packet can be forwarded by said egress router based on said SGI, a destination of said packet and an identifier of said tunnel.

39. (Previously Presented) The computer program product of claim 37, wherein said seventh set of instructions comprises:

- a first subset of instructions, executable on said computer system, configured to generate an index into an access control list (ACL), wherein said ACL comprises information regarding whether said packet can be forwarded by said egress router, and
- said index includes said identifier of said tunnel; and

a second subset of instructions, executable on said computer system, configured to access said ACL using said index.

40. (Currently Amended) An apparatus comprising:
means for assigning a security group identifier (SGI) to a packet, wherein
said means for assigning said SGI is configured to assign said SGI based on a
security group of a sender of said packet;
means for classifying said packet based on said SGI, wherein
said means for classifying is coupled to said means for assigning, and
said means for classifying comprises a memory;
means for determining a routing of said packet, wherein
said means for determining comprises a processor, and
said means for determining is configured to use said SGI in determining said
routing; and
means for forwarding said packet via a tunnel identified by said routing, if forwarding a
packet having said SGI via said tunnel is permitted.

41. (Original) The apparatus of claim 40, further comprising:
means for determining whether said packet can be sent via a tunnel on based a result
generated by said means for classifying said packet.

42. (Cancelled)

43. (Previously Presented) The apparatus of claim 41, further comprising:
means for forwarding said packet via said tunnel, wherein said means for forwarding is
configured to forward said packet via said tunnel if forwarding a packet having
said SGI via said tunnel is permitted.

44. (Original) The apparatus of claim 41, wherein said determining comprises:
means for generating an index, wherein said index comprises said SGI; and
means for using said index to access an access control list (ACL), wherein said ACL
includes information as to whether said packet can be sent via a tunnel.

45. (Original) The apparatus of claim 44, wherein said information comprises:
an SGI field; and
a tunnel identifier field.

46. (Previously Presented) The apparatus of claim 40, wherein
said means for forwarding said packet is configured to forward said packet from an
ingress router to an egress router via said tunnel.

47. (Original) The apparatus of claim 46, further comprising:
means for receiving said packet at said egress router; and
means for determining whether said packet can be forwarded by said egress router based
on said SGI.

48. (Original) The apparatus of claim 47, wherein said means for determining
whether said packet can be forwarded further comprises:
means for determining whether said packet can be forwarded by said egress router based
on said SGI, a destination of said packet and an identifier of said tunnel.

49. (Original) The apparatus of claim 47, wherein said means for determining
whether said packet can be forwarded further comprises:
means for generating an index into an access control list (ACL), wherein
said ACL comprises information regarding whether said packet can be forwarded
by said egress router, and
said index includes said identifier of said tunnel; and
means for accessing said ACL using said index.